

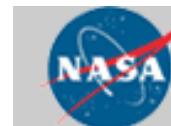
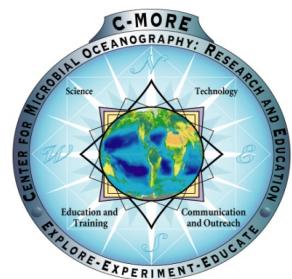
Platforms and Sensors for Enabling Marine Microbial Omics Observations

Ocean Obs Research Coordination Network Meeting
San Francisco
December 13, 2015

Chris Scholin

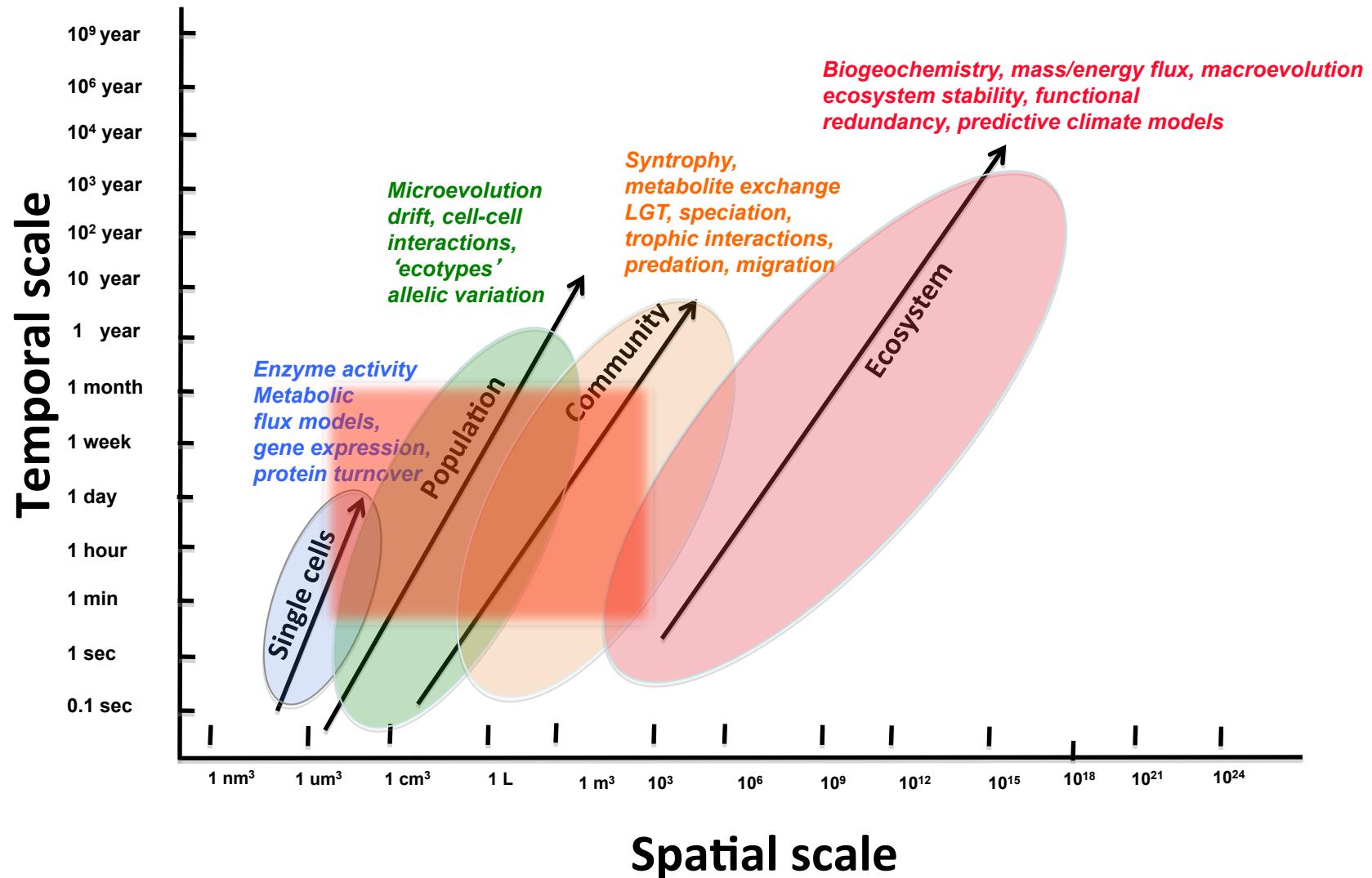


*Gretating positive outcomes
for future generations.*



National Aeronautics
and Space Administration

Omics perspectives on cells, populations, communities & ecosystems



Source: Ed DeLong

Taking the Pulse of the Ocean

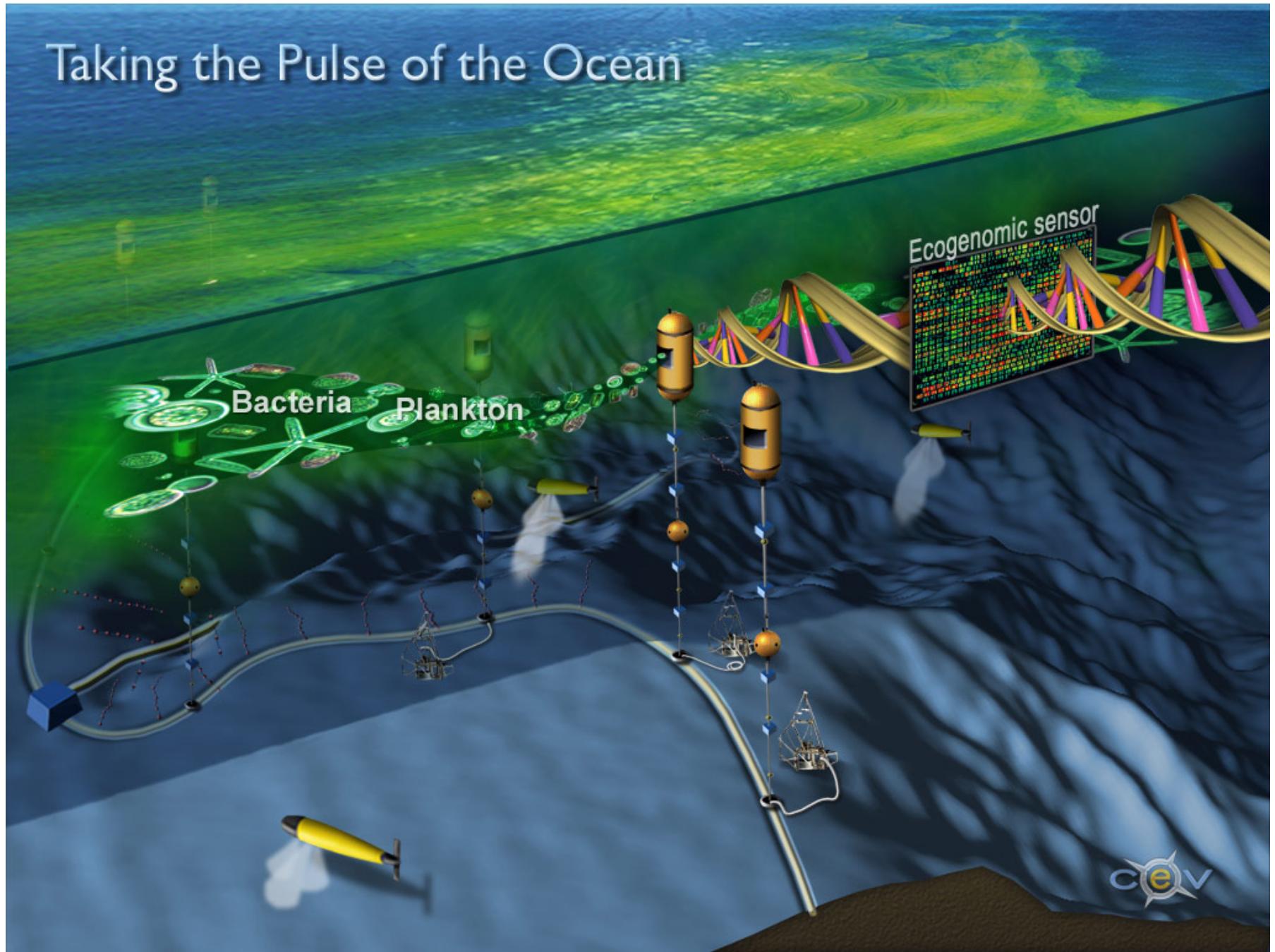
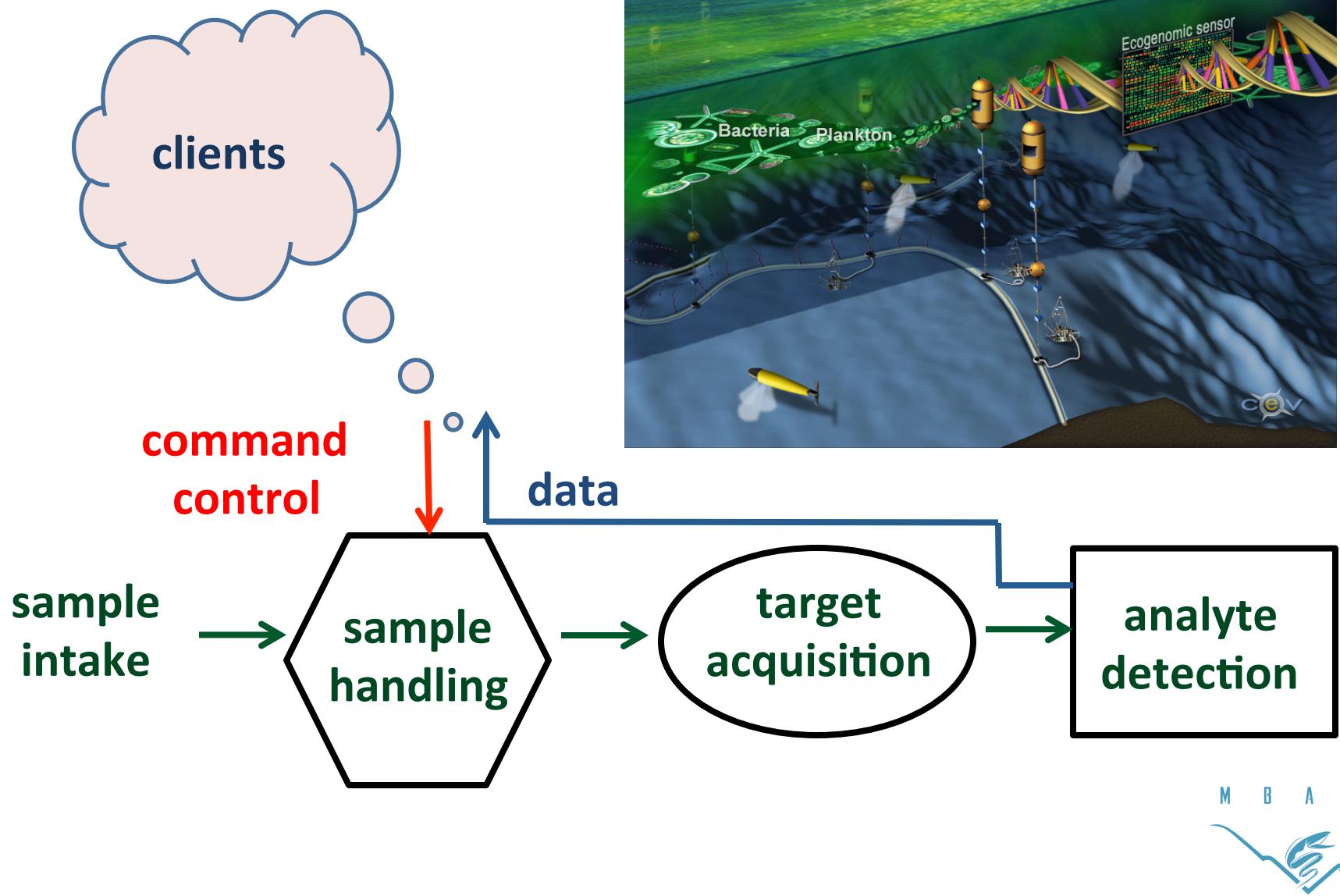


Image courtesy of the Center for Environmental Visualization, University of Washington

What is an ecogenomic sensor?

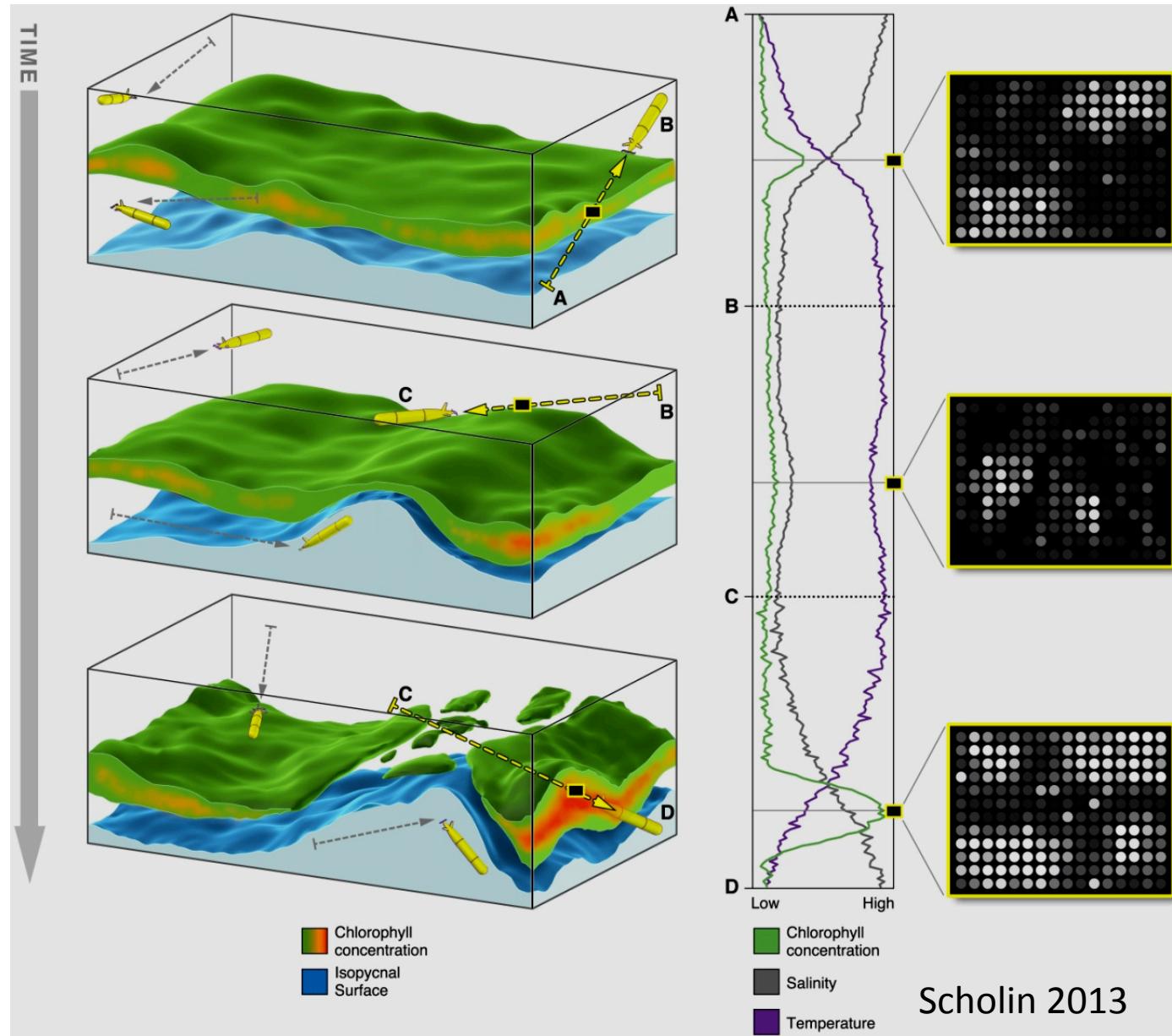


Some lessons learned

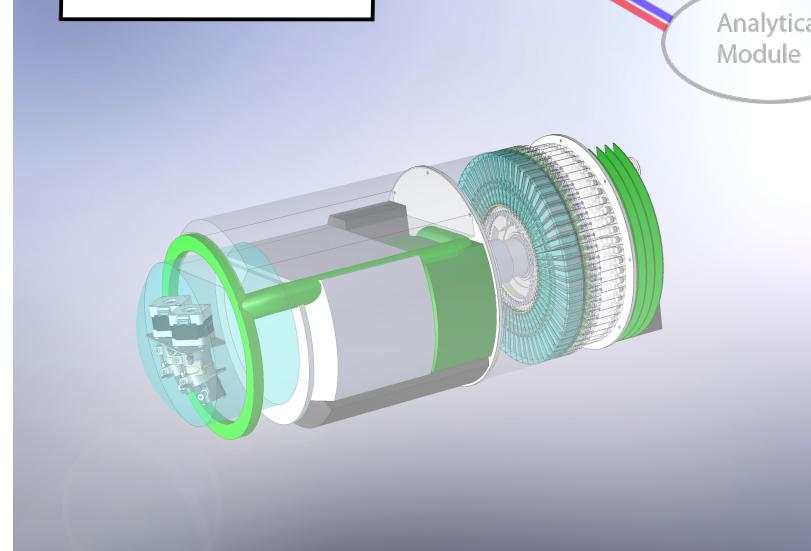
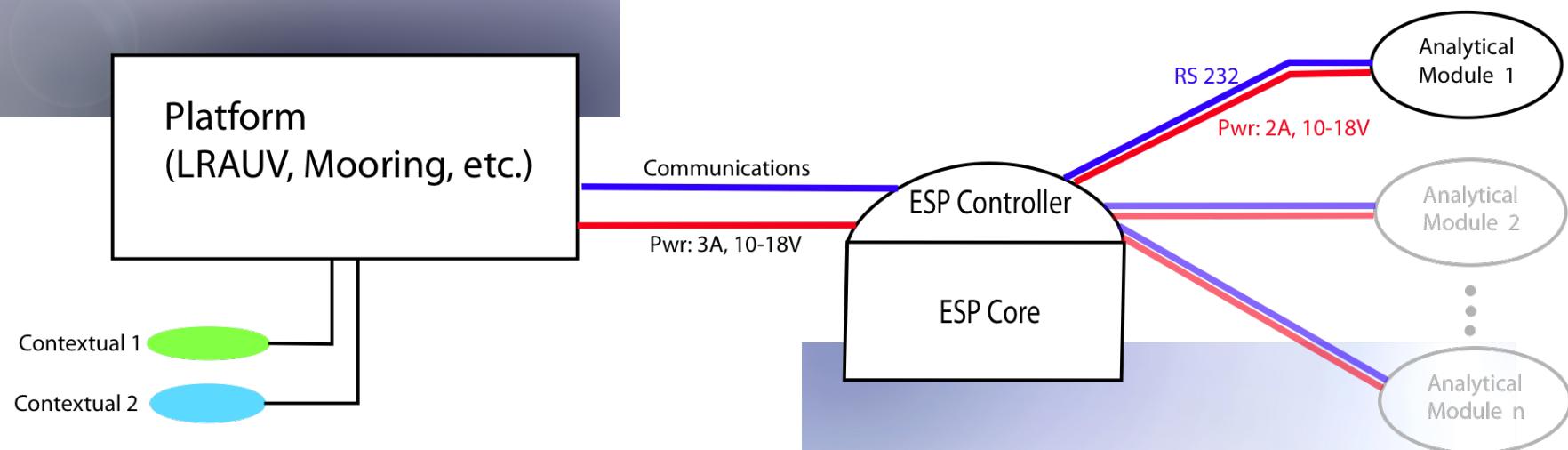
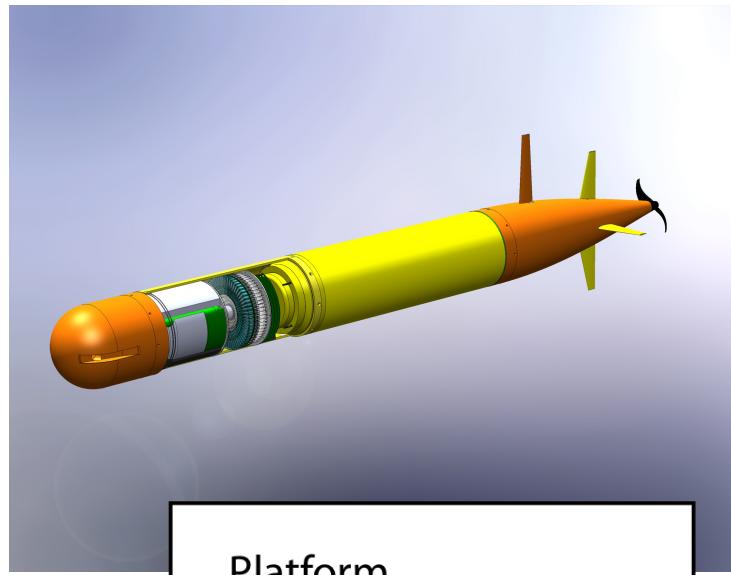
- The ecogenomic sensor concept is valid
- A sample preservation capability complements real-time analyses
- Data presentation intuitively linking microbial activity to space, time, and environmental fluctuations remains a challenge
- A mobile capability is desirable
upper water column studies demand surface-300m depth capability



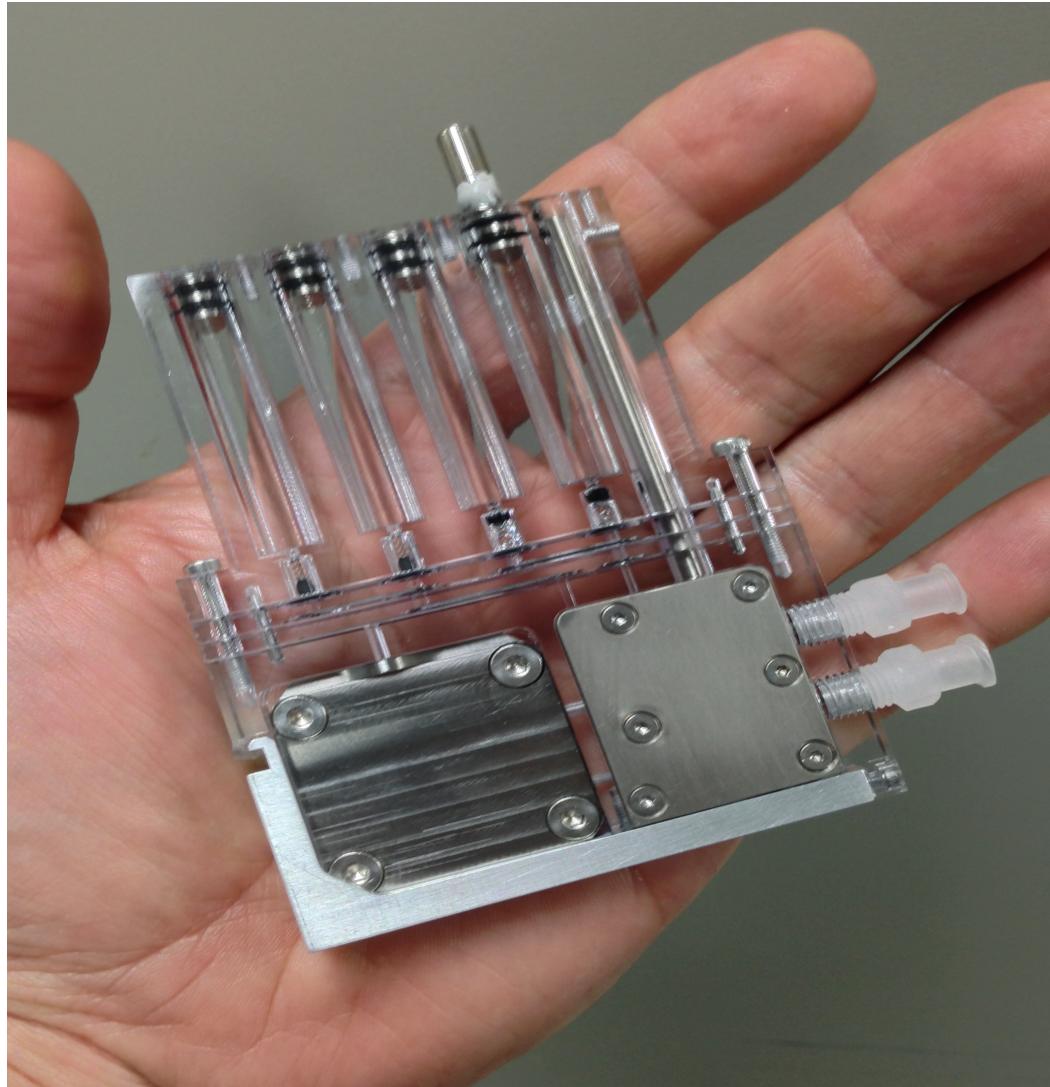
Towards the first mobile ecogenomic sensors



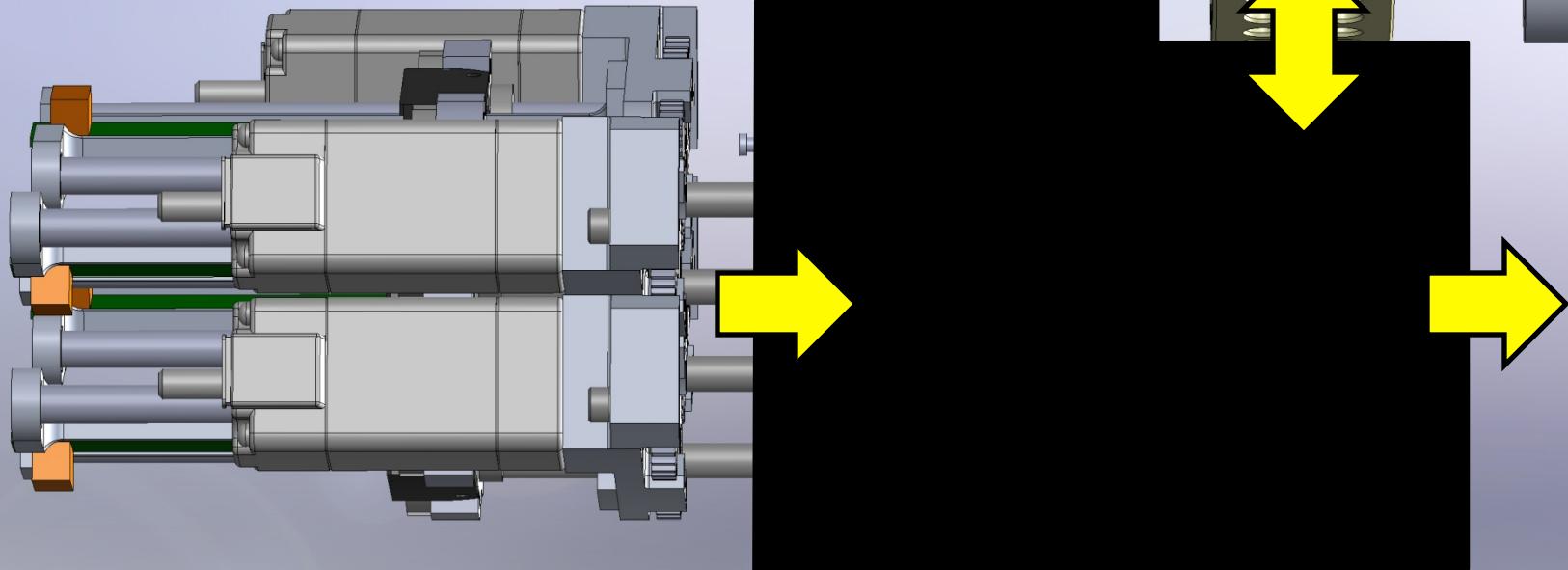
3G ESP/LRAUV Concept



3G ESP cartridge concept



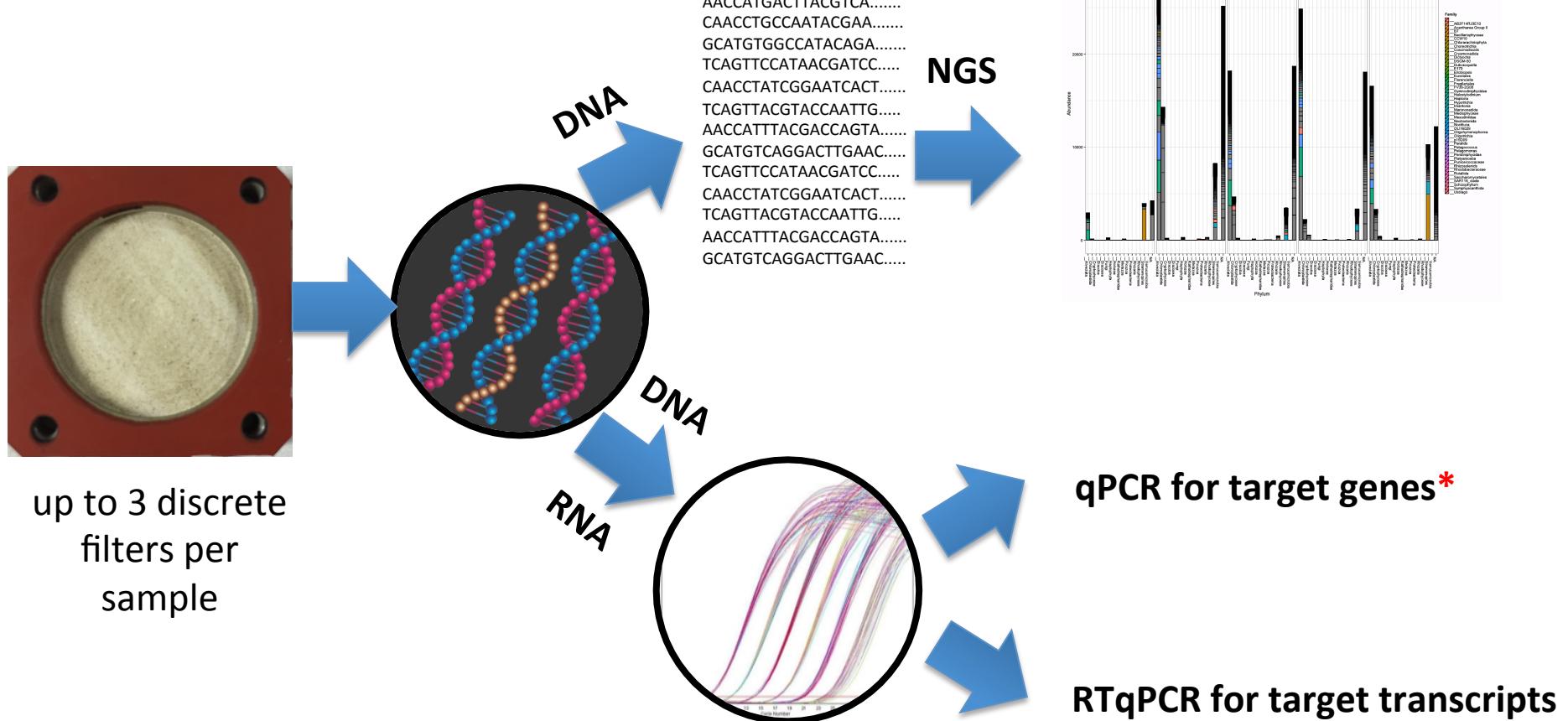
Cartridge connects to core sampler and downstream analytical modules via standardized interfaces



Makai deployment July 2015



Processing of single 3G ESP LRAUV samples for targeted qPCR, NGS (rDNA diversity), and eDNA analyses



***Results from MB field trials – 3G ESP successfully picked up anchovy eDNA**

Biodiversity observation network concept

